



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/593,728	09/20/2006	Carsten Diederichs	W1.2259 PCT-US	4030
7590 Douglas R. Hanscom Jones, Tullar & Cooper P.O.Box 2266 Eads Station Arlington, VA 22202	03/19/2009		EXAMINER LEGASSE JR, FRANCIS M	
			ART UNIT 2878	PAPER NUMBER
			MAIL DATE 03/19/2009	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/593,728	DIEDERICHS, CARSTEN	
	Examiner	Art Unit	
	FRANCIS M. LEGASSE JR	2878	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 08 December 2008.

2a) This action is **FINAL**. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 21-38 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 21-38 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) Notice of References Cited (PTO-892)

2) Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 24 April 2008.

4) Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) Notice of Informal Patent Application

6) Other: _____.

DETAILED ACTION

Status of Claims

Claims 1-20 are cancelled.

Claims 21, 22, 28, 31, 36 and 38 are amended.

Claims 21-38 are pending.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 21, 23, 28 and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Juvinal (US Patent No. 6,175,107 B1) in view of Hinata (US Patent No. 6,480,280 B1) and Ford (US Patent No. 4,280,624).

Regarding claim 21, Juvinal (*figures 1, 2 and 6, reproduced below*) disclose an optical system adapted to generate an illuminated pattern on a surface of a material comprising:

- a material support (40) usable to support said material (12) for movement (conveyor drive, rotation 30) of said material (12) relative to said illuminated pattern at a speed;
- an illumination arrangement including a plurality of light sources (14, 22), said illumination arrangement being usable to generate said illuminated pattern on

said surface of said material moving at said speed;

- a detection device (24) usable to detect light emitted by said light sources (14, 22);
- a control device (34) usable to selectively operate one (14 or 22) of light sources in a pulsed manner;
- a light source chronological behavior of at least one light source (14) of said plurality of light sources (14, 22), said light source chronological behavior including a light source switched-on time length (pulse of 14) and a light source delay time (time delay) length immediately preceding said light source switched-on time (pulse of 14) and a light source switched-off time length subsequent to said light source switched-on time length;
- a detection device chronological behavior of said detection device, said detection device chronological behavior including a detection device exposure time length (frame 1) and a detection device off time length immediately following said detection device exposure time, said detection device off time length being set as a function of said transport speed of said material (12), said light source switched-on time (pulse of 14) length and said light source delay time length being synchronized with said detection device exposure time length (frame 1) and being less than said detection device exposure time length;
- a first time sum set by said control device (34) and including said light source delay time length (time delay) and said light source switched-on time length

(pulse of 14); and

- a second time set by said control device (34) and including said detection device exposure time length (frame 1), said second time sum being greater than said first time sum (width of frame 1 greater than width of (time delay plus pulse)), said light source switched-on time (pulse of 14) length and said light source delay time (time delay) being within said detection device exposure time length (frame 1).

Note: The detection off time is inherently set as a function of the speed of the conveyor. This ensures that the proper areas will be captured.

Juvinal fails to explicitly teach that a group of said plurality of light sources is operated by said control device and explicitly controlling the device with a variable speed.

Hinata (*figures 2 and 4*) teaches controlling (22, 23) a group (11) of a plurality of light sources (col. 7, lines 20-30).

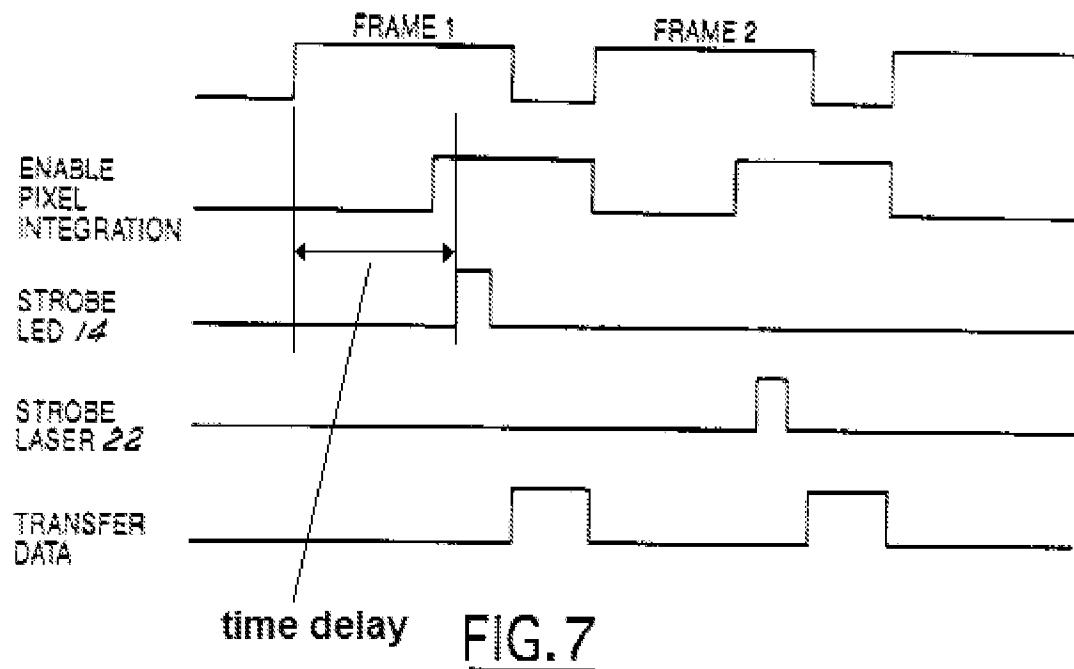
It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the group of the plurality of light sources of Hinata in combination with the system of Juvinal because it increases the amount of light reflecting off the bottle neck thus improving the quality of the image obtained by the detector.

Juvinal as modified by Hinata fails to explicitly teach controlling the device with a variable speed.

Ford teaches a device wherein the speed of the conveyor can be varied (col. 2,

lines 65-68; col. 3, lines 1-5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a variable speed control in the device of Juvinal as modified by Hinata as taught by Ford because it will enable the throughput to be adjusted thus controlling the number of bottles able to be processed.



Reproduced from US Patent 6,175,107 B1

Regarding claim 23, Juvinal as modified by Hinata and Ford (*Hinata: figure 4*) disclose an optical system adapted to generate an illuminated pattern on a surface of a material further comprising an electrical current supply (supply lines) assigned to said illumination arrangement and being controlled by said control device (22,23)

Regarding claim 28, Juvinal as modified by Hinata and Ford (*Hinata: figure 8*) disclose an optical system adapted to generate an illuminated pattern on a surface of a

material wherein said illuminated pattern is an illuminated strip (3) on said material (8), said illuminated strip (3) having a strip width and strip length and forming said illuminated pattern.

Regarding claim 31, Juvinal as modified by Hinata and Ford (*Juvinal: figure 1*) disclose an optical system adapted to generate an illuminated pattern on a surface of a material controlling the time when the light source is turned on (*figure 7*) but fails to teach that the control device varies said light source switched-on time length as a function of optical properties of said material to be illuminated.

It is common knowledge in the art to vary the length a light source is on depending on the material being illuminated.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a specific on time length in the system of Juvinal as modified by Hinata and Ford because it will ensure that the proper amount of light is impinged on the material, thus improving the quality of the image detected.

Claims 21, 25-27, 29-30 and 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Juvinal in view of Lindner (US 2001/0054680 A1) and Ford.

- a material support (40) usable to support said material (12) for movement (conveyor drive, rotation 30) of said material (12) relative to said illuminated pattern at a speed;
- an illumination arrangement including a plurality of light sources (16, 17), said illumination arrangement being usable to generate said illuminated pattern on

said surface of said material moving at said speed;

- a detection device (24) usable to detect light emitted by said light sources (16, 17);
- a control device (34) usable to selectively operate one (14 or 22) of light sources in a pulsed manner;
- a light source chronological behavior of at least one light source (14) of said plurality of light sources (14, 22), said light source chronological behavior including a light source switched-on time length (pulse of 14) and a light source delay time (time delay) length immediately preceding said light source switched-on time (pulse of 14) and a light source switched-off time length subsequent to said light source switched-on time length;
- a detection device chronological behavior of said detection device, said detection device chronological behavior including a detection device exposure time length (frame 1) and a detection device off time length immediately following said detection device exposure time, said detection device off time length being set as a function of said transport speed of said material (12), said light source switched-on time (pulse of 14) length and said light source delay time length being synchronized with said detection device exposure time length (frame 1) and being less than said detection device exposure time length;
- a first time sum set by said control device (34) and including said light source delay time length (time delay) and said light source switched-on time length

(pulse of 14); and

- a second time set by said control device (34) and including said detection device exposure time length (frame 1), said second time sum being greater than said first time sum (width of frame 1 greater than width of (time delay plus pulse)), said light source switched-on time (pulse of 14) length and said light source delay time (time delay) being within said detection device exposure time length (frame 1).

Note: The detection off time is inherently set as a function of the speed of the conveyor. This ensures that the proper areas will be captured.

Juvinal fails to explicitly teach that a group of said plurality of light sources is operated by said control device and explicitly controlling the device with a variable speed.

Lindner (*figure 1*) teaches controlling (C) a group (L, single column) of a plurality of light sources ([0027]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the group of the plurality of light sources of Lindner in combination with the system of Juvinal because it increases the amount of light reflecting off the bottle neck thus improving the quality of the image obtained by the detector.

Juvinal as modified by Lindner fails to explicitly teach controlling the device with a variable speed.

Ford teaches a device wherein the speed of the conveyor can be varied (col. 2,

lines 65-68; col. 3, lines 1-5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a variable speed control in the device of Juvinal as modified by Lindner as taught by Ford because it will enable the throughput to be adjusted thus controlling the number of bottles able to be processed.

Regarding claim 25, Juvinal as modified by Lindner and Ford (*Lindner: figure 1*) disclose an optical system adapted to generate an illuminated pattern on a surface of a material further including several groups (vertical columns) of said light sources (L) in said illumination arrangement (D).

Regarding claim 26, Juvinal as modified by Lindner and Ford (*Lindner: figure 1*) disclose an optical system adapted to generate an illuminated pattern on a surface of a material further including at least one electrical current source (individual lines to the columns of LEDs) controlled by said control device (C) and assigned to each of said several groups (vertical columns) of said several groups of said light sources (L).

Regarding claim 27, Juvinal as modified by Lindner and Ford (*Lindner: figure 1*) disclose an optical system adapted to generate an illuminated pattern on a surface of a material wherein each said electrical current source is a constant electrical current source [(0027)].

Note: Constant light source inherently implies a constant power source to the light sources.

Regarding claim 29, Juvinal as modified by Lindner and Ford (*Lindner: figure 1*) disclose an optical system adapted to generate an illuminated pattern on a surface of a

material wherein said plurality of light sources (L) are arranged as lines (vertical) in said illumination arrangement (D) and further wherein a profile of an amount of light is produced by control (C) of said light sources (L) over a length of their arrangement as said lines ([0030]).

Regarding claim 30, Juvinal as modified by Lindner and Ford (*Lindner: figure 1*) disclose an optical system adapted to generate an illuminated pattern on a surface of a material wherein the profile is set along a length of an illuminated strip (constant light output through the array [0027]).

Regarding claim 35, Juvinal as modified by Lindner and Ford (*Lindner: figure 1*) disclose an optical system adapted to generate an illuminated pattern on a surface of a material wherein said detection device (11, CCD) includes a plurality of detectors arranged next to each other in the shape of lines.

Note: It is inherent that the individual pixels (or detectors) of a CCD are arranged in lines.

Regarding claim 36, Juvinal as modified by Lindner and Ford (*Lindner: figure 1*) disclose an optical system adapted to generate an illuminated pattern on a surface of a material wherein said detectors arranged next to each other in the shape of lines are arranged parallel to one of a length of an illuminated strip formed as said illuminating pattern and a width of said material (B).

Regarding claim 37, Juvinal as modified by Lindner and Ford (*Lindner: figure 1*) disclose an optical system adapted to generate an illuminated pattern on a surface of a material wherein a spacing between said lines of detection and said direction of

movement of said material (B), is orthogonal.

Regarding claim 38, Juvinal as modified by Lindner and Ford (*Juvinal: figure 1*) disclose an optical system adapted to generate an illuminated pattern on a surface of a material wherein at least one light source (14) of said illumination arrangement emits a constant amount of light during said light source switched-on time length.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Juvinal in view of Lindner and Ford, as applied to claim 21, and in further view of Griesbeck (US Patent No. 5,591,899).

Regarding claim 24, Juvinal as modified by Lindner and Ford (*figures 1, 2 and 6, reproduced above*) disclose an optical system adapted to generate an illuminated pattern on a surface of a material comprising a detection device (24) usable to detect light emitted by said light sources (16, 17) but fails to teach that said detection device is a line-scanning camera.

Griesbeck teaches an optical system wherein said detection device (16) is a line-scanning camera (col. 3, lines 27-30).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the camera of Griesbeck in combination with the system of Juvinal as modified by Lindner and Ford because, in col. 1, lines 48-52, Griesbeck discloses that it will improve the reliability of a plastic or glass vessel inspection machine for detecting contaminated, damaged and leaking vessels at comparatively low cost and at a high production rate.

Claims 32-34 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Juvinal in view of Lindner and Ford, as applied to claim 21, and in further view of Cheang et al. (US Patent No. 7,012,382 B2, "Cheang", hereinafter).

Regarding claim 32, Juvinal as modified by Lindner and Ford (*Lindner: figure 1*) disclose an optical system adapted to generate an illuminated pattern on a surface of a material comprising a controller (C) controlling a group (L, single column) of a plurality of light sources ([0027]) but fails to teach further including a light sensor connected with said control device and useable to measure an amount of light emitted by said light sources.

Cheang (*figure 1*) teaches a light emitting diode system comprising a light sensor (114) connected with said control device (116) and useable to measure an amount of light emitted by said light sources (102, 104, 106).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the feedback system of Cheang in combination with the optical system of Juvinal as modified by Lindner because, in col.1, lines 39-41, Cheang discloses that the LED based light system can produce light of a desired quality for longer than current LED-based light systems.

Regarding claim 33, Juvinal as modified by Lindner, Ford and Cheang (*Cheang: figure 1*) disclose an optical system adapted to generate an illuminated pattern on a surface of a material wherein said control device (116) matches said switched-on time length of said light sources to a degradation behavior of said light sources (102, 104, 106) by use of said light sensor (114) (col. 3, lines 10-28).

Regarding claim 34, Juvinal as modified by Lindner, Ford and Cheang

(*Cheang: figure 1*) disclose an optical system adapted to generate an illuminated pattern on a surface of a material wherein said control device (116) compensates for a reduction in an amount of light emitted by said light sources (102, 104, 106), as a result of their aging, by use of said measured signal from said light sensor (114) (col. 3, lines 5-30).

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Juvinal in view of Lindner and Ford, as applied to claim 21, and in further view of Lai et al. (US 20020171754 A1, “Lai”, hereinafter).

Regarding claim 22, Juvinal as modified by Lindner and Ford (*Juvinal: figures 1, 2 and 6, reproduced above*) disclose an optical system adapted to generate an illuminated pattern on a surface of a material comprising a detection device (24) usable to detect light emitted by said light sources (16, 17) but fails to teach said control device is usable to switch said light source on simultaneously with a start of said detection device exposure time.

Lai (*figures 1 and 2*) teaches a control device (10) wherein said control device (10) is usable to switch said light source (22) on simultaneously with a start of said detection device exposure time (B).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the control of Lai in combination with the device of Juvinal as modified by Lindner and Ford because it will ensure that a proper amount of light is impinging upon the subject, thus ensuring that a high quality image will be captured.

Response to Arguments

Applicant's argument, filed 8 December 2008, that there is no teaching for alight source delay time in the Juvinal reference has been fully considered but is not persuasive. Examiner disagrees. The delay time is present on the timing graph of Juvinal (figure 7, reproduced above). The figure is similar to that of the instant application. It appears Applicant may be misinterpreting the phrase "delay time". A delay time may be associated with a time period where the device is not in an active state. There is inherently a delay time period from when the camera (frame 1) and the strobe are turned on. This is further evidenced by the long pause prior to the strobe being turned on. Therefore, the rejections, as set forth above, are maintained.

Applicant's argument, filed 8 December 2008, that the Juvinal reference fails to teach a first time sum and a second time has been fully considered but is not persuasive. Examiner disagrees. It appears that Applicant may be misinterpreting the Juvinal reference. All that is required by Applicant's claim are two time periods. One relating the exposure time for the camera (image sensor) and the other directed towards the delay time and on time of the light source. The Juvinal reference does just that. It teaches an exposure time (frame 1) and a delay time and on time for the light source. Therefore, the rejections, as set forth above, are maintained.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Francis M. LeGasse Jr whose telephone number is (571) 272-9798. The examiner can normally be reached on Monday through Thursday 7:00 am to 5:30 pm E.S.T.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on (571) 272-2328. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Francis M. LeGasse Jr.
Patent Examiner AU 2878
571.272.9798

/Thanh X Luu/
Primary Examiner, Art Unit 2878